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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,400	06/16/2005	Takashi Fujikawa	Q88448	2906

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EXAMINER	
HAILEY, PATRICIA L	
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1793	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/539,400	FUJIKAWA ET AL.	
	Examiner	Art Unit	
	PATRICIA L. HAILEY	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 April 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4* is/are rejected.

7)☒ Claim(s) *5 and 6* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *02/11/08; 07/08/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Applicants' remarks and amendments, filed on April 23, 2008, have been carefully considered. No claims have been canceled or added; claims 1-6 remain pending in this application.

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Applicants' Priority Document was filed on June 16, 2005.

Claim Objections

2. Claims 5 and 6 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

In its present form, claims 5 and 6 both depend from "any one of claims 1 to 4"; claims 3 and 4 are both multiple dependent claims (i.e., "according to claims 1 or 2").

Maintained Rejections

The following rejections of record have been maintained; the text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Double Patenting

3. Claims 1, 3, and 4 stand rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 4, and 5 of U.S. Patent No. 7,361,624 (formerly Application Serial No. 10/344,317).

Although the conflicting claims are not identical, they are not patentably distinct from each other because the respective sets of claims are directed to a catalyst for hydrotreating gas oil, said catalysts each comprising an inorganic oxide support, at least one metal selected from Group 6 metals, at least one Group 8 metal, and phosphorus, each in terms of a respective oxide based on the catalyst, and "an organic acid…as an amount of carbon", each in amount of 2 to 14 wt. %.

In the instant application, the Group 6 metal is present in an amount of 10 to 40% by weight, the Group 8 metal is present in an amount of 1 to 15% by weight, and phosphorus is present in an amount of 1.5 to 8% by weight.

In the '624 patent, the Group 6 metal is present in an amount of from 10 to 30% by weight, the Group 8 metal is present in an amount of from 1 to 15% by weight, and phosphorus is present in an amount of from 1.5 to 6% by weight.

The respectively claimed catalysts exhibit comparable specific surface areas (150-300 m^2/g in the instant application versus 220-300 m^2/g in the patent) and pore volumes (0.3-0.6 ml/g in the instant application versus 0.35 to 0.6 ml/g in the patent). However, the average pore diameters slightly differ: 96-140 angstroms in the instant

application versus 65-95 angstroms in the patent. A difference of one angstrom in pore diameter is deemed negligible in view of the remaining similarities as set forth above.

Claims 3 and 4 in the instant application are nearly identical to claims 4 and 5 in the patent.

Although the claims in the instant application recite an additional property of the catalyst, in that, when the catalyst is observed on a diffuse-reflectance FT-IR after sulfidation treatment and subsequent NO adsorption, a value of I8 group/ (I8 group + I6 group) is within the range of 0.7 to 1, it would necessarily follow that these properties would be exhibited by the catalyst in the patent, given the comparable amounts of the respectively cited and claimed components.

4. Claim 1 stands provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 10/594,451.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the respective sets of claims are drawn to catalysts comprising an inorganic oxide support, 10 to 40% by weight of at least one Group 6 metal, 1 to 15% by weight of at least one Group 8 metal, and "carbon in an amount of 2 to 14% by weight" ('451 application) or "an organic acid at from 2 to 14 wt. % as an amount of carbon" (instant application).

In the instant application, phosphorus (in terms of an oxide) is present in an amount of 1.5 to 8% by weight; in the '451 application, phosphorus oxide is present in an amount of 15% by weight or less.

The respectively claimed catalysts exhibit comparable specific surface areas (150-300 m^2/g in the instant application versus 100-400 m^2/g in the '451 application), pore volumes (0.3-0.6 ml/g in the instant application versus 0.2 to 0.6 ml/g in the '451 application), and average or mean (synonymous terms) pore diameters (65-140 angstroms in the instant application versus 50-200 angstroms in the '451 application).

Although the claims in the instant application recite an additional property of the catalyst, in that, when the catalyst is observed on a diffuse-reflectance FT-IR after sulfidation treatment and subsequent NO adsorption, a value of I8 group/ (I8 group + I6 group) is within the range of 0.7 to 1, it would necessarily follow that these properties would be exhibited by the catalyst in the patent, given the comparable amounts of the respectively cited and claimed components.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

5. Claims 1 and 2 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Dai et al. (U. S. Patent No. 5,397,456) in view of Defresne et al. (U. S. Patent No. 6,559,092).

Dai et al. disclose a catalyst comprising an alumina support bearing 3-6 wt. % of a Group VIII (8) metal oxide, 14.5-24 wt.% of a Group VI-B (6) metal oxide, and 0-6 wt.% of a phosphorus oxide, said catalyst having a Total Surface Area of 240-310 m^2/g, a Total Pore Volume of 0.5-0.75 cc/g (ml/g), and a Pore Diameter Distribution whereby 63-78% of the Total Pore Volume is present as micropores of diameter 55-115 angstroms and 11-18% of the Total Pore Volume is present as macropores of diameter greater than 250 angstroms. See col. 5, lines 24-35 of Dai et al. (considered to read upon **claims 1 and 2**).

Dai et al. do not teach or suggest the presence of a carbon component, as recited in claim 1.

Dufresne et al. disclose that subjecting hydrotreating catalysts to carbonization improves the hydrodesulphurizing and hydrogenating properties of the catalysts, as well as reduce initial selectivity for the cracking product and for isomerization. See col. 1, lines 50-58 of Dufresne et al.

Carbonization can be performed with carbon-containing sources such as organic acids; the quantity of carbon deposited at the end of the impregnation step ranges from about 2 to 30% by weight with respect to the mass of oxide catalyst. See col. 2, lines 1-37 of Dufresne et al.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Dai et al. by incorporating therein a

carbon component, as suggested by Dufresne et al., in an endeavor to improve the hydrodesulphurizing and hydrogenating properties of the prior art catalysts.

6. Claims 3 and 4 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Dai et al. (U. S. Patent No. 5,397,456) in view of Dufresne et al. (U. S. Patent No. 6,559,092) as applied to claims 1 and 2 above, and further in view of "Morphology Study of MoS_2- and WS_2-Based Hydrotreating Catalysts by High-Resolution Electron Microscopy," by E. Payen et al. (hereinafter "the Payen Article"), Applicants' submitted art.

Dai et al. and Dufresne et al. are relied upon for their teachings with respect to claims 1 and 2. Neither of these references teaches nor suggests the limitations of claims 3 and 4 regarding the average number of laminated layers of disulfide of the Group 6 metal, and of the average in-plane-direction length of layers of disulfide of the Group 6 metal.

Nonetheless, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the phosphorus-containing catalysts resulting from the combination of the Dai et al. and Dufresne et al. references would exhibit the length (L) and layer stacking distribution (N) values as set forth in Applicants' claims 3 and 4, motivated by the fact that the Payen Article, also drawn to catalysts comprising Group 6 metal, Group 8 metal, and/or phosphorus on alumina supports, discloses that the inclusion of phosphorus induces layer stacking, with mean length and layer stacking distribution values of between 2.4-4.4 nm and 1.4-2.7 layers, respectively. See page 128

of the Payen Article, in the section entitled "Effect of Additives (Samples 10 to 15)", as well as Table 2 of the Payen Article, Catalyst numbers 10 and 12, and the Abstract.

Response to Arguments

In response to Applicants' arguments that the organic acid is added "to form a complex with a Group 8 metal", the Examiner respectfully submits that Applicants' claims in their present form do not recite this feature. Further, Applicants' claims recite the limitation "as an amount of carbon", which implies that the organic acid present in the claimed catalyst may convert to carbon as a result of drying the solution containing the claimed components.

Further, because Dufresne et al. disclose the employment of organic acids as an exemplary carbon source in a percentage range that overlaps the claimed "2 to 14 wt%", one of ordinary skill in the art would reasonably expect the organic acids to be present in molar amounts comparable to that instantly claimed, absent the showing of convincing evidence to the contrary.

Applicants' remarks regarding the Payen Article's teachings regarding the preparation method therein have been considered, but are not deemed germane to Applicants' claimed catalyst. The Article was relied upon for its teachings regarding the length and layer stacking distribution values of catalysts comprising Groups 6 and 8 metals and/or phosphorus on alumina supports.

For these reasons, Applicants' arguments are not persuasive, and the rejections of record are maintained.

Conclusion

7. Although claims 5 and 6 have not been further treated on the merits due to their multiple claim dependency, the objection of these claims does not necessitate a new ground of rejection. Accordingly, **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PATRICIA L. HAILEY whose telephone number is (571)272-1369. The examiner can normally be reached on Mondays-Fridays, from 7:00 a.m. to 3:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 1700 Receptionist, whose telephone number is (571) 272-1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jerry A Lorengo/
Supervisory Patent Examiner, Art Unit 1793

/PATRICIA L. HAILEY/
Examiner, Art Unit 1793
August 1, 2008